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==> s mirkin m?/au  
L1 79 MIRKIN M?/AU  
==> s bard a?/au  
L2 817 BARD A?/AU  
==> s l1 and l2  
L3 27 L1 AND L2  
==> s analytical chemistry/jt  
L4 27764 ANALYTICAL CHEMISTRY/JT  
(ANALYTICAL CHEMISTRY/JT)  
==> s l3 and l4  
L5 3 L3 AND L4  
==> d l5 1-3 ibib abs  
L5 ANSWER 1 OF 3 SCISEARCH COPYRIGHT (c) 2007 The Thomson  
Full Text  
Corporation on STN  
ACCESSION NUMBER: K2650.285189 SCISEARCH  
THE GENUINE ARTICLE: K2650.285189 SCISEARCH  
TITLE: SCANNING ELECTROCHEMICAL MICROSCOPY .19. ION-SELECTIVE  
POTENTIOMETRIC MICROSCOPY  
AUTHOR: HORROCKS B R (Reprint); MIRKIN M V; PIERCE D T; BARD A  
J; NAGY G; TOH K  
UNIV TEXAS, DEPT CHEM & BIOCHEM, AUSTIN, TX 78712; TECH  
UNIV BUDAPEST, INST GEN & ANALYT CHEM, H-1521 BUDAPEST,  
HUNGARY  
CORPORATE SOURCE: USA; HUNGARY  
COUNTRY OF AUTHOR: ANALYTICAL CHEMISTRY, (1 MAY 1993) Vol. 65, No. 9, pp.  
SOURCE: 1213-1224.  
ISSN: 0003-2700.  
PUBLISHER: AMER CHEMICAL SOC, 1155 16TH ST, NW, WASHINGTON, DC 20036.  
DOCUMENT TYPE: Article; Journal  
FILE SEGMENT: PHYS; LIFE  
LANGUAGE: English  
REFERENCE COUNT: 40  
ENTRY DATE: Entered STN: 1994  
Last Updated on STN: 1994  
\*ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS\*  
AB Potentiometric pH selective tips for scanning electrochemical  
microscopy (SECM) have been developed and used to image local pH changes  
in a variety of model chemical systems. Images of pH profiles around a  
platinum microelectrode during water reduction, a corroding disk of silver  
iodide in aqueous potassium cyanide, a disk of immobilized urease  
hydrolyzing urea, and a disk of immobilized yeast cells in glucose  
solution were obtained. A simple method for fabricating antimony  
microdisk electrodes suitable for use in SECM is described. The general  
theory for SECM with potentiometric ion selective tips is also presented,  
assuming that the tip is a purely passive sensor. Reasonable agreement  
with theory was observed for relatively large tip to surface separations.  
The deviations observed at small separations were due to shielding of the  
surface by the tip and, consequently, were found to be much less  
significant for smaller tips.

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Corporation on STN  
ACCESSION NUMBER: 1992:588288 SCISEARCH  
THE GENUINE ARTICLE: J0527

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NEWS 5 JAN 16 WPIDS/WPINDEX/WPIX enhanced with IPC 8 reclassification data  
NEWS 6 JAN 22 CA/Captus updated with revised CAS roles  
NEWS 7 JAN 22 CA/Captus enhanced with patent applications from India  
NEWS 8 JAN 29 PHAR enhanced with new search and display fields  
NEWS 9 JAN 29 CAS Registry Number crossover limit increased to 300,000 in  
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NEWS 15 FEB 26 TOXCENTER enhanced with reloaded MEDLINE  
NEWS 16 FEB 26 IFICDB/IFIPAT/IFIUBD reloaded with enhancements  
NEWS 17 FEB 26 CAS Registry Number crossover limit increased from 10,000  
to 300,000 in multiple databases  
NEWS 18 MAR 15 WPIDS/WPIX enhanced with new FRAGHITSTR display format  
NEWS 19 MAR 16 CASREACT coverage extended  
NEWS 20 MAR 20 MARPAT now updated daily  
NEWS 21 MAR 22 LWPI reloaded  
NEWS 22 MAR 30 DISCLOSURE reloaded with enhancements  
NEWS 23 APR 02 JICST-PLUS removed from database clusters and STN  
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NEWS 26 APR 30 CA/Captus enhanced with 1870-1889 U.S. patent records  
NEWS 27 APR 30 INPADOC replaced by INPADOCDB on STN  
NEWS 28 MAY 01 New CAS web site launched  
NEWS 29 MAY 08 CA/Captus Indian patent publication number format defined  
NEWS 30 MAY 14 DISCLOSURE on STN Easy enhanced with new search and display  
fields  
NEWS 31 MAY 21 BIOSIS reloaded and enhanced with archival data  
NEWS 32 MAY 21 TOXCENTER enhanced with BIOSIS reloaded  
NEWS 33 MAY 21 CA/Captus enhanced with additional kind codes for German  
patents  
NEWS 34 MAY 22 CA/Captus enhanced with IPC reclassification in Japanese  
patents

NEWS EXPRESS NOVEMBER 10 CURRENT WINDOWS VERSION IS V8.01C, CURRENT  
MACINTOSH VERSION IS V6.0C(ENG) AND V6.0JC(JP),  
AND CURRENT DISCOVER FILE IS DATED 25 SEPTEMBER 2006.

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FILE 'HOME' ENTERED AT 10:03:57 ON 31 MAY 2007

=> file scisearch

COST IN U.S. DOLLARS

SINCE FILE ENTRY TOTAL  
SESSION

TITLE: SIMPLE ANALYSIS OF QUASI-REVERSIBLE STEADY-STATE VOLTAMMOGRAMS

AUTHOR: MIRKIN M V (Reprint); BARD A J

CORPORATE SOURCE: UNIV TEXAS, DEPT CHEM & BIOCHEM, AUSTIN, TX 78712

COUNTRY OF AUTHOR: USA

SOURCE: ANALYTICAL CHEMISTRY, (1 OCT 1992) Vol. 64, No. 19, pp. 2293-2302.

ISSN: 0003-2700.

PUBLISHER: AMER CHEMICAL SOC, 1155 16TH ST, NW, WASHINGTON, DC 20036.

DOCUMENT TYPE: Article; Journal

FILE SEGMENT: PHYS: LIFE

LANGUAGE: English

REFERENCE COUNT: 25

ENTRY DATE: Entered STN: 1994

Last Updated on STN: 1994

\*ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS\*

AB The kinetic parameters (k-degrees and alpha) of a complicated quasi-reversible electrochemical reaction studied by any steady-state voltammetric technique can be found directly from the values of two easily accessible experimental parameters, (E1/4 - E1/2) and (E1/2 - E3/4), where E1/2 is the experimental half-wave potential and E1/4 and E3/4 are voltammetric quartile potentials. For any type of steady-state (or pseudo-steady-state) current-potential curve obtained with a uniformly accessible working electrode, e.g., voltammetry at a rotating disk or hemispherical microelectrode, polarography, sample current voltammetry, and thin-layer voltammetry, a table is given which shows the kinetic parameters, i.e., standard rate constant, k-degrees, and the transfer coefficient, alpha, and also the formal potential, E-degrees, from the two above experimental values. An analogous table is presented for the nonuniformly a microdisk electrode. Unlike previously reported approaches, an independent evaluation of the standard (formal) potential is unnecessary. This analysis also does not rely on values of the electrode surface area and the bulk concentration of electroactive species which usually decrease the accuracy of the results. The application of the proposed methodology to other electrochemical systems including scanning electrochemical microscopy (SECM) and ultramicroelectrodes shaped as a cone or spherical segment is also discussed.

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Full text

Accession on STN Corporation on STN 1991:138385 SCISEARCH

ACCESSION NUMBER: 1991:138385

THE GENUINE ARTICLE: FA188

TITLE: VOLTAMMETRIC METHOD FOR THE DETERMINATION OF BOROHYDRIDE CONCENTRATION IN ALKALINE AQUEOUS-SOLUTIONS

AUTHOR: MIRKIN M V (Reprint); BARD A J

CORPORATE SOURCE: UNIV TEXAS, DEPT CHEM, AUSTIN, TX 78712

COUNTRY OF AUTHOR: USA

SOURCE: ANALYTICAL CHEMISTRY, (1 MAR 1991) Vol. 63, No. 5, pp. 532-533.

ISSN: 0003-2700.

PUBLISHER: AMER CHEMICAL SOC, 1155 16TH ST, NW, WASHINGTON, DC 20036.

DOCUMENT TYPE: Note; Journal

FILE SEGMENT: PHYS: LIFE

LANGUAGE: English

REFERENCE COUNT: 8

ENTRY DATE: Entered STN: 1994

Last Updated on STN: 1994

=> sel L5 3 CIT

E1 THROUGH E1 ASSIGNED

=> s E1

L6 17 "MIRKIN M V, 1991, V63, P532, 3"/RE

("MIRKIN M V, 1991, V63, P532, 3"/RE)

=> d 16 1-17 ibib abs

L6 ANSWER 1 OF 17 SCISEARCH COPYRIGHT (c) 2007 The Thomson

Full text

Corporation on STN

ACCESSION NUMBER: 2007:347607 SCISEARCH

THE GENUINE ARTICLE: 143PW

TITLE: Evaluation of new ion exchange membranes for direct borohydride fuel cells

AUTHOR: Cheng H (Reprint); Scott K; Lovell K; Horsfall J A; Waring S C

CORPORATE SOURCE: Univ Newcastle Upon Tyne, Sch Chem Engrg & Adv Mat, Newcastle Upon Tyne NE1 7RU, Tyne & Wear, England (Reprint); Cranfield Univ, Dept Mat & Med Sci, Swindon SN6 8LA, Wilts, England

hual.cheng@ncl.ac.uk

COUNTRY OF AUTHOR: England

SOURCE: JOURNAL OF MEMBRANE SCIENCE, (1 FEB 2007) Vol. 288, No. 1-2, pp. 168-174.

ISSN: 0376-7388.

PUBLISHER: ELSEVIER SCIENCE BV, PO BOX 211, 1000 AE AMSTERDAM, NETHERLANDS.

DOCUMENT TYPE: Article; Journal

LANGUAGE: English

REFERENCE COUNT: 29

ENTRY DATE: Entered STN: 5 Apr 2007

Last Updated on STN: 5 Apr 2007

\*ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS\*

AB Several radiation grafted ion exchange membranes were prepared and evaluated in half-cells and direct borohydride fuel cells (DBFC) using voltammetric and steady-state polarisation techniques. The peak power density of 112 mW cm<sup>-2</sup> was achieved in a DBFC with an ETFE-g-PSSA membrane using a solution of 1.32 M sodium borohydride and 2.5 M sodium hydroxide, 1 bar oxygen at 85 degrees C. The chemical and mechanical stabilities of the membranes were tested under various conditions. The membrane performance was compared to that obtained with the benchmark Nafion(R) 117 membrane. The results are discussed based on the electrical, chemical structural and mechanical properties of the membranes. (c) 2006 Elsevier B.V. All rights reserved.

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Accession on STN Corporation on STN

ACCESSION NUMBER: 2007:32826 SCISEARCH

THE GENUINE ARTICLE: 116SB

TITLE: The direct borohydride fuel cell for UVV propulsion power

AUTHOR: Lakernan J B; Rose A (Reprint); Poynton K D; Browning D J; Lovell K V; Waring S C; Horsfall J A

CORPORATE SOURCE: Datl Porton Down, Phys Sci, Salisbury SP4 0OR, Wilts, England (Reprint); Cranfield Univ, Dept Mat & Med Sci, Swindon SN6 8LA, Wilts, England

akoss@dntl.gov.uk

COUNTRY OF AUTHOR: England

SOURCE: JOURNAL OF POWER SOURCES, (22 NOV 2006) Vol. 162, No. 2, Sp. Iss. SI, pp. 765-772.

ISSN: 0378-7753.

PUBLISHER: ELSEVIER SCIENCE BV, PO BOX 211, 1000 AE AMSTERDAM, NETHERLANDS.

DOCUMENT TYPE: Article; Journal

LANGUAGE: English

REFERENCE COUNT: 6

ENTRY DATE: Entered STN: 11 Jan 2007

Last Updated on STN: 11 Jan 2007

\*ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS\*

AB The development of proton exchange membrane and direct methanol fuel cell stacks is now well advanced for many applications. However, the significant performance advantages that these have over the battery for small to moderate scale applications will not be realised until a viable fuel source has been developed. The deficiencies of the PEMFC and DMFC can be eliminated by cation or anion-conducting membranes incorporated into a direct sodium borohydride fuel cell (DSBFC). The characterisation of membranes for the DSBFC is discussed. Novel membranes have been prepared which have resistance to an equal magnitude to the commercially available Nafion(R) membrane. Crown Copyright 0 2005 Published by Elsevier B.V. All rights reserved.

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Full Text on STN  
Corporation 2006:1094009 SCISEARCH  
ACCESSION NUMBER: 102KG  
THE GENUINE ARTICLE:  
TITLE: Material aspects of the design and operation of direct  
borohydride fuel cells  
AUTHOR: Cheng H (Reprint); Scott K; Lovell K  
CORPORATE SOURCE: New U Newcastle Upon Tyne, Sch Chem Engrn & Adv Mat,  
Newcastle Upon Tyne NE1 7RU, Tyne & Wear, England  
(Reprint); Cranfield Univ, Dept Mat & Med Sci, Swindon SN6  
8LA, Wilts, England  
hua.cheng@ncl.ac.uk  
England  
COUNTRY OF AUTHOR:  
SOURCE: FUEL CELLS, (OCT 2006) Vol. 6, No. 5, pp. 367-375.  
ISSN: 1615-6846.  
PUBLISHER: WILEY-V C H VERLAG GMBH, PO BOX 10 11 61, D-69451  
WEINHEIM, GERMANY.  
ARTICLE: Journal  
DOCUMENT TYPE: English  
LANGUAGE: 31  
REFERENCE COUNT:  
ENTRY DATE: Entered STN: 23 Nov 2006

**\*ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS\***

The direct borohydride fuel cell (DBFC) has attracted increasing interest as a potential high power source for mobile and portable applications. Engineering design plays an important role in the development of the DBFC. This paper reports data for the selection of anode cathode and membrane materials for the DBFC. The best DBFC performance is achieved with a Au anode, a Pt cathode, and a 354P ion exchange membrane. The use of non-precious catalysts, e.g., Ag, leads to promising results.

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Full Text  
Corporation on STN  
ACCESSION NUMBER: 2006:975576 SCISEARCH  
THE GENUINE ARTICLE: 0900B  
TITLE: New borohydride fuel cell with multiwalled carbon

**AUTHOR:** Desmukh K; Santhanam K S V (Reprint)  
**CORPORATE SOURCE:** Rochester Inst Technol, Ctr Mat Sci & Engrn, Rochester, NY 14623 USA (Reprint); Rochester Inst Technol, Dept Chem, Rochester, NY 14623 USA  
**COUNTRY OF AUTHOR:** USA  
[kssch@rit.edu](mailto:kssch@rit.edu)

COUNTRY OF AUTHOR: USA  
SOURCE: JOURNAL OF POWER SOURCES, (22 SEP 2006) Vol. 159, No. 2, pp. 1084-1088.

**PUBLISHER:**  
ELSEVIER SCIENCE BV, PO BOX 211, 1000 AE AMSTERDAM,  
NETHERLANDS.  
ISSN: 0378-1753.

DOCUMENT TYPE: Article; Journal  
LANGUAGE: English

41  
REFERENCE COUNT:  
ENTRY DATE: Entered STN: 20 Oct 2006  
Last Updated on STN: 20 Oct 2006

**ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS.**  
\*LAST UPDATED ON: 20 OCT 2006

A borohydride fuel cell has been constructed using a platinized multimetal carbon nanotube (MWCNT) anode and an air cathode having an anionic exchange membrane separating the anode and cathode. The MWCNTs were functionalized with carboxylic acid under nitric acid reflux. Platinized metal was subsequently incorporated into it by galvanostatic deposition. The platinized functionalized MWCNT was characterized by thermogravimetric analysis, Fourier transform infrared spectrum, scanning electron microscope and X-ray diffraction. The fuel cell produced a voltage of 0.95 V at low currents and a maximum power density of 44mWcm<sup>-2</sup> at temperature in 10% sodium borohydride in a 4 M sodium hydroxide medium. Another borohydride fuel cell under identical conditions using carbon nanotube anode produced a cell voltage of 0.90 V and power density of about 40 mW cm<sup>-2</sup>. The improved performance of the MWCNT is attributed to the higher effective surface area and catalytic activity. (c) 2006 Elsevier B.V. All rights reserved.

L6 ANSWER 5 OF 17 SCISEARCH COPYRIGHT (c) 2007 The Thomson  
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Corporation on STN  
ACCESSION NUMBER: 077JVV SCISEARCH  
THE GENUINE ARTICLE: 077JVV  
TITLE: Kinetics of sodium borohydride direct oxidation and oxygen  
reduction in sodium hydroxide electrolyte - Part I. BH4-  
electro-oxidation on Au and Ag catalysts  
Chatenet N (Reprint); Micoud F; Roche I; Chainet E  
UJF, CNRS, ENSEEG, INPG, UMR 5631, LEPMI, BP 75, F-38402  
St Martin Dheres, France (Reprint); UJF, CNRS, ENSEEG,  
INPG, UMR 5631, LEPMI, F-38402 St Martin Dheres, France  
Maxime.Chatenet@lepmi.inpg.fr  
France  
COUNTRY OF AUTHOR: ELECTROCHIMICA ACTA, (28 JUL 2006) Vol. 51, No. 25, pp.  
5459-5467.  
ISSN: 0013-4686.  
PUBLISHER: PERGAMON-ELSEVIER SCIENCE LTD, THE BOULEVARD, LANGFORD  
LANE, KIDLINGTON, OXFORD OX5 1GB, ENGLAND.

DOCUMENT TYPE:  
Article; Journal  
LANGUAGE:  
English  
REFERENCE COUNT:  
35  
ENTRY DATE:  
Entered STN: 15 Sep 2006

AB

The direct oxidation of sodium borohydride in concentrated sodium hydroxide medium has been studied by cyclic and linear voltammetry, chronoamperometry and chronopotentiometry for silver and gold electrocatalysts, either bulk and polycrystalline or nanodispersed over high area carbon blacks. Gold and silver yield rather complete utilisation of the reducer: around 7.5 electrons are delivered on these materials, versus 4 at the most for platinum as a result of the BH<sub>4</sub><sup>-</sup> non-negligible hydrolysis taking place on this latter material. The kinetic parameters for the direct borohydride oxidation are better for gold than for silver. A strong influence of the ratio of sodium hydroxide versus sodium borohydride is found: whereas the theoretical stoichiometry does forecast that eight hydroxide ions are needed for each borohydride ion, our experimental results prove that a larger excess hydroxide ion is necessary in quasi-steady state conditions. When the above-mentioned ratio is unity (1 M NaOH and 1 M NaBH<sub>4</sub>), the tetrahydroborate ions direct oxidation is limited by the hydroxide concentration, and their hydrolysis is no longer negligible. The hydrolysis products are probably BH<sub>3</sub>OH<sup>-</sup> ions, for which gold displays a rather good oxidation activity. Additionally, silver, which is a weak BH<sub>4</sub><sup>-</sup> oxidation electrocatalyst, exhibits the best activity of all the studied materials towards the BH<sub>3</sub>OH<sup>-</sup> direct oxidation.

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Corporation on STN  
 ACCESSION NUMBER: 2006:450013 SCISEARCH  
 THE GENUINE ARTICLE: 035LR  
 TITLE: Direct borohydride fuel cells  
 AUTHOR: de Leon C P; Walsh P C (Reprint); Pletcher D; Browning D

**CORPORATE SOURCE:**  
J. Lakeman J B  
Univ Southampton, Sch Engrg Sci, Electrochem Engrg Grp,  
Southampton SO17 1BJ, Hants, England (Reprint); Univ  
Southampton SO17 1BJ, Hants, England  
England; Dept Phys Sci, Salisbury SP4 0QR, Wilts, England  
E.C.Walsh@aston.ac.uk

**COUNTRY OF AUTHOR:** ENGLAND  
**SOURCE:** JOURNAL OF POWER SOURCES, (21 APR 2006) Vol. 155, No. 2, pp. 172-181.  
**PUBLISHER:** ELSEVIER SCIENCE BV, PO BOX 211, 1000 AE AMSTERDAM, NETHERLANDS.  
**ISSN:** 0378-7753.  
**DOCUMENT TYPE:** General Review; Journal  
**LANGUAGE:** English

REFERENCE COUNT:  
ENTRY DATE:

58  
Entered STN: 11 May 2006  
Last Updated on STN: 11 May 2006  
\*ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS\*  
AB fuel cells is reviewed. Electrochemical reactions are considered together with the importance of operating parameters on cell performance. The advances in technology necessary for a widespread testing and more application of borohydride fuel cells are highlighted. A comparison of borohydride and methanol fuel cells shows that both systems exhibit similar cell voltages, current and power densities despite that methanol cells operate at higher temperatures. The results are encouraging although more research is necessary, particularly in the synthesis of new electrocatalysts for borohydride oxidation. (c) 2006 Elsevier B.V. All rights reserved.

L6 ANSWER 7 OF 17 SCISEARCH COPYRIGHT (c) 2007 The Thomson

Full Text  
Corporation on STN  
ACCESSION NUMBER: 2005:1233596 SCISEARCH  
THE GENUINE ARTICLE: 989LC  
TITLE: The electroanalytical determination of sodium borohydride using a gold electrode  
AUTHOR: Celikhan H; Aydin H; Aksu M L (Reprint)  
CORPORATE SOURCE: Gazi Univ, Gazi Educ Fac, Dept Chem Educ, TR-06500 Ankara, Turkey (Reprint); Gazi Univ, Arts & Sci Fac, Dept Chem, TR-06500 Ankara, Turkey  
makus@gazi.edu.tr  
COUNTRY OF AUTHOR: Turkey  
SOURCE: TURKISH JOURNAL OF CHEMISTRY, (2005) Vol. 29, No. 5, pp. 519-524.  
ISSN: 1300-0527.  
PUBLISHER: SCIENTIFIC TECHNICAL RESEARCH COUNCIL TURKEY-TUBITAK, NATIRUK BULVARI NO 221, KAVAKLIDERE, TR-06100 ANKARA, TURKEY.  
DOCUMENT TYPE: Article; Journal  
LANGUAGE: English  
REFERENCE COUNT: 12  
ENTRY DATE: Entered STN: 15 Dec 2005  
Last Updated on STN: 29 Dec 2005  
\*ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS\*  
AB It was shown that square wave voltammetry, a technique with a much lower detection limit, could be successfully used in the detection of borohydride formed in alkaline medium. A An electrode was found to be very suitable for this purpose. The detection limit was  $3 \times 10^{-5}$  M.

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Full Text  
Corporation on STN  
ACCESSION NUMBER: 2005:571184 SCISEARCH  
THE GENUINE ARTICLE: 930HN  
TITLE: Electrooxidation mechanisms and discharge characteristics of borohydride on different catalytic metal surfaces  
AUTHOR: Dong H; Feng R X; Ai X P; Cao Y L; Yang H X (Reprint); Cha C S  
CORPORATE SOURCE: Wuhan Univ, Dept Chem, Wuhan 430072, Peoples R China (Reprint)  
acs@whu.edu.cn  
COUNTRY OF AUTHOR: Peoples R China  
SOURCE: JOURNAL OF PHYSICAL CHEMISTRY B, (2 JUN 2005) Vol. 109, No. 21, pp. 10896-10901.  
ISSN: 1520-6106  
PUBLISHER: AMER CHEMICAL SOC, 1155 16TH ST, NW, WASHINGTON, DC 20036 USA  
DOCUMENT TYPE: Article; Journal  
LANGUAGE: English  
REFERENCE COUNT: 16  
ENTRY DATE: Entered STN: 9 Jun 2005  
Last Updated on STN: 9 Jun 2005  
\*ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS\*  
AB The electrooxidation behavior of BH<sub>4</sub><sup>-</sup> on electrocatalytic Pt, hydrolytically active Ni, and noncatalytic Au electrodes were

comparatively reexamined and a more generalized reaction mechanism was proposed to explain the very different anodic properties of BH<sub>4</sub><sup>-</sup> on the different metal electrodes. In this mechanism, the anodic reaction behavior of BH<sub>4</sub><sup>-</sup> are determined by a pair of conjugated reactions: electrochemical oxidation and chemical hydrolysis of BH<sub>4</sub><sup>-</sup>, the relative rates of which depend on the anodic materials, applied potentials, and chemical states of the anodic surfaces. At Pt surface, the electron number of BH<sub>4</sub><sup>-</sup> oxidation increases with the increased potential polarization, while the actual electron number of BH<sub>4</sub><sup>-</sup> oxidation on Ni electrode is 4 at most due to the poor electrocatalytic activity of the oxidized Ni surface and the strong catalytic activity of metallic Ni for chemical recombination of the adsorbed H intermediate. On the hydrolytic-inactive Au surface, the anodic reaction of BH<sub>4</sub><sup>-</sup> can proceed predominately through direct electrochemical oxidation, delivering a near 8e discharge capacity.

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Full Text  
Corporation on STN  
ACCESSION NUMBER: 2004:160546 SCISEARCH  
THE GENUINE ARTICLE: 772XY  
TITLE: Electrooxidation of borohydride on platinum and gold electrodes: implications for direct borohydride fuel cells  
AUTHOR: Gyenge E (Reprint)  
CORPORATE SOURCE: Univ British Columbia, Dept Chem & Biol Engr, 2215 Main Mall, Vancouver, BC V6T 1Z4, Canada (Reprint); Univ British Columbia, Dept Chem & Biol Engr, Vancouver, BC V6T 1Z4, Canada  
COUNTRY OF AUTHOR: Canada  
SOURCE: ELECTROCHIMICA ACTA, (1 MAR 2004) Vol. 49, No. 6, pp. 965-978.  
ISSN: 0013-4686  
PUBLISHER: PERGAMON-ELSEVIER SCIENCE LTD, THE BOULEVARD, LANGFORD LANE, KIDLINGTON, OXFORD OX5 1GB, ENGLAND.  
DOCUMENT TYPE: Article; Journal  
LANGUAGE: English  
REFERENCE COUNT: 29  
ENTRY DATE: Entered STN: 27 Feb 2004  
Last Updated on STN: 27 Feb 2004  
\*ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS\*  
AB The electrochemical oxidation of BH<sub>4</sub><sup>-</sup> in 2 M NaOH on Pt and Au (i.e. catalytic and non-catalytic electrodes, respectively, for BH<sub>4</sub><sup>-</sup> hydrolysis accompanied by H<sub>2</sub> evolution) has been studied by cyclic voltammetry, chrono-techniques (i.e., potentiometry, amperometry, coulometry) and electrochemical impedance spectroscopy. In the case of Pt the cyclic voltammetry behaviour of BH<sub>4</sub><sup>-</sup> is influenced by both, the catalytic hydrolysis of BH<sub>4</sub><sup>-</sup> yielding H<sub>2</sub> (followed by electrooxidation of the latter at peak potentials between -0.7 and -0.9 V versus Ag/AgCl, KClstd) and direct oxidation of BH<sub>4</sub><sup>-</sup> at more positive potentials, i.e., between -0.15 and -0.05 V. Thiourea (TU, 1.5 x 10<sup>-3</sup> M) was an effective inhibitor of the catalytic hydrolysis associated with BH<sub>4</sub><sup>-</sup> electrooxidation on Pt. Therefore, in the presence of TU, only the direct oxidation of BH<sub>4</sub><sup>-</sup> has been detected, with peak potentials between -0.2 and 0 V. It is proposed that TU could improve the BH<sub>4</sub><sup>-</sup> utilization efficiency and the coulombic efficiency of direct borohydride fuel cells using catalytic anodes. The electrooxidation of BH<sub>4</sub><sup>-</sup> on Pt/TU is an overall four-electron process, instead of the maximum eight electrons reported for Au, and it is affected by adsorbed species such as BH<sub>4</sub><sup>-</sup> (fractional surface coverage similar to 0.3), TU and possibly reaction intermediates. (C) 2003 Elsevier Ltd. All rights reserved.

L6 ANSWER 10 OF 17 SCISEARCH COPYRIGHT (c) 2007 The Thomson

Full Text  
Corporation on STN  
ACCESSION NUMBER: 1999:509928 SCISEARCH  
THE GENUINE ARTICLE: 211CU  
TITLE: Inexpensive, in-situ monitoring of borohydride concentrations  
AUTHOR: Amendola S; Onnerud P; Kelly M T; Binder M (Reprint)  
CORPORATE SOURCE: Millennium Cell Co, 8 Cedar Brook Dr, Cranbury, NJ 08512 USA (Reprint); Millennium Cell Co, Cranbury, NJ 08512 USA  
COUNTRY OF AUTHOR: USA

SOURCE: TALANTA, (14 JUN 1999) Vol. 49, No. 2, pp. 267-270.  
ISSN: 0039-9140.  
PUBLISHER: ELSEVIER SCIENCE BV, PO BOX 211, 1000 AE AMSTERDAM, NETHERLANDS.  
DOCUMENT TYPE: Article; Journal  
LANGUAGE: English  
REFERENCE COUNT: 4  
ENTRY DATE: Entered STN: 1999  
Last Updated on STN: 1999  
\*ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS.\*  
AB ions in aqueous alkaline solutions containing perates can be easily and rapidly accomplished by simply measuring open circuit potentials of selected metals (relative to a suitable reference) immersed in these solutions. (C) 1999 Elsevier Science B.V. All rights reserved.

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Full Text  
Corporation on STN  
ACCESSION NUMBER: 1998:950448 SCISEARCH  
THE GENUINE ARTICLE: 147GV  
TITLE: Electrolysis attempts of tetrahydroborates  
AUTHOR: Gyenge E L (Reprint); Oloman C W  
CORPORATE SOURCE: Univ British Columbia, Dept Chem Engr, Vancouver, BC V6T 1Z4, Canada (Reprint)  
COUNTRY OF AUTHOR: Canada  
SOURCE: JOURNAL OF APPLIED ELECTROCHEMISTRY, (OCT 1998) Vol. 28, No. 10, pp. 1147-1151.  
PUBLISHER: KLUWER ACADEMIC PUBL, VAN GODEWIJCKSTRAAT 30, 3311 GZ DORDRECHT, NETHERLANDS.  
DOCUMENT TYPE: Article; Journal  
LANGUAGE: English  
REFERENCE COUNT: 24  
ENTRY DATE: Entered STN: 1998  
Last Updated on STN: 1998

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Full Text  
Corporation on STN  
ACCESSION NUMBER: 1997:679526 SCISEARCH  
THE GENUINE ARTICLE: XV103  
TITLE: Scanning electrochemical microscopy. 35. Determination of diffusion coefficients and concentrations of Ru(NH3)6(3+) and methylene blue in polyacrylamide films by chronoamperometry at ultramicrodisk electrodes  
AUTHOR: Pyo M (Reprint); Bard A J  
CORPORATE SOURCE: UNIV TEXAS, DEPT CHEM & BIOCHEM, AUSTIN, TX 78712 USA  
COUNTRY OF AUTHOR: USA  
SOURCE: ELECTROCHIMICA ACTA, (1997) Vol. 42, No. 20-22, pp. 3077-3083.  
PUBLISHER: PERGAMON-ELSEVIER SCIENCE LTD, THE BOULEVARD, LANGFORD LANE, KIDLINGTON, OXFORD, ENGLAND OX5 1GB.  
DOCUMENT TYPE: Article; Journal  
FILE SEGMENT: PHYS  
LANGUAGE: English  
REFERENCE COUNT: 22  
ENTRY DATE: Entered STN: 1997  
Last Updated on STN: 1997  
\*ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS.\*  
AB The chronoamperometric response at an ultramicrodisk electrode (diameter = 25 µm) inserted into polyacrylamide (PAAm) gel films containing reducible electroactive species [Ru(NH3)6(3+)] and methylene blue (MB) was used to determine the diffusion coefficients (D) and concentrations (C) of these species using a previously proposed treatment of chronoamperometric data. The diffusion coefficients of transition and steady-state currents. The diffusion coefficients obtained in film were slightly smaller (75-93%) than the values for the same species in solution, demonstrating that the film environment is mainly an aqueous one contained within large polymer pores. The calculated concentrations were in good agreement with those used to cast the films. Complexes of MB with DNA were also examined in solution

and in a PAAM film. The diffusion coefficients in both cases were significantly smaller (similar to 23%) than those of MB alone. The results indicate that, with some limitations, the chronoamperometric response of films probed with an SEM tip can be used to determine both D and C with knowledge of only the ultramicrodisk radius. (C) 1997 Elsevier Science Ltd.

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Full Text  
Corporation on STN  
ACCESSION NUMBER: 1994:777713 SCISEARCH  
THE GENUINE ARTICLE: PU984  
TITLE: DETERMINATION OF THE ACTIVE HYDROGEN CONTENT IN PYRIDINE-BORANE COMPLEX BY SCHIFF-BASE REDUCTION AND HIGH-PERFORMANCE LIQUID-CHROMATOGRAPHY  
AUTHOR: MORLEY J A (Reprint); ELROD L; BAUER J F  
CORPORATE SOURCE: ABBOTT LABS, DEPT PHYS ANALYT CHEM, PPD, 1401 SHERIDAN RD, N CHICAGO, IL 60064 (Reprint)  
COUNTRY OF AUTHOR: USA  
SOURCE: ANALYTICAL CHEMISTRY, (1 DEC 1994) Vol. 66, No. 23, pp. 4283-4287.  
PUBLISHER: AMER CHEMICAL SOC, 1155 16TH ST, NW, WASHINGTON, DC 20036.  
DOCUMENT TYPE: Article; Journal  
FILE SEGMENT: PHYS; Life  
LANGUAGE: English  
REFERENCE COUNT: 24  
ENTRY DATE: Entered STN: 1994  
Last Updated on STN: 1994  
\*ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS.\*  
AB Borohydrides and borane complexes have been widely used as selective reducing agents in many chemical applications. In particular, the pyridine-borane complex (PBC, C5H5N-BH3) is very stable to hydrolysis and is an attractive reagent for large-scale reductions that are common in the pharmaceutical industry. This report describes a simple, rapid, and reproducible method for quantitating the active hydrogen content in PBC. The method exploits the ease with which Schiff bases are reduced by amine-boranes and uses high-performance liquid chromatography to quantitate the reduction product. The method is not affected by small amounts of extraneous moisture and can be carried out in common glassware. The potential application of the analytical procedure to other amine-borane complexes is also discussed.

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Full Text  
Corporation on STN  
ACCESSION NUMBER: 1993:454929 SCISEARCH  
THE GENUINE ARTICLE: LN361  
TITLE: INDIRECT DETERMINATION OF TETRAHYDROBORATE (BH4-) BY GAS-DIFFUSION FLOW-INJECTION ANALYSIS WITH AMPEROMETRIC DETECTION  
AUTHOR: NIKOLIC S D (Reprint); MILOSAVLJEVIC E B; HENDRIX J L; NELSON J H  
CORPORATE SOURCE: UNIV BELGRADE, FAC MED, POB 550, YU-11001 BELGRADE, YUGOSLAVIA; UNIV NEVADA, MACKAY SCH MINES, DEPT CHEM, RENO, NV 89557; UNIV NEVADA, MACKAY SCH MINES, DEPT MET ENGN, RENO, NV 89557  
COUNTRY OF AUTHOR: YUGOSLAVIA; USA  
SOURCE: TALANTA, (AUG 1993) Vol. 40, No. 8, pp. 1283-1287.  
PUBLISHER: ELSEVIER SCIENCE BV, PO BOX 211, 1000 AE AMSTERDAM, NETHERLANDS.  
DOCUMENT TYPE: Article; Journal  
FILE SEGMENT: PHYS  
LANGUAGE: English  
REFERENCE COUNT: 23  
ENTRY DATE: Entered STN: 1994  
Last Updated on STN: 1994  
\*ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS.\*  
AB A rapid, indirect gas-diffusion flow injection analysis (FIA) method with amperometric detection has been developed for the selective and sensitive determination of tetrahydroborate (BH4-). The injected analyte

reduces arsenic(III) to arsine. The arsine formed diffuses through the PTFE (poly-tetrafluoroethylene) membrane and is quantified amperometrically at a platinum working electrode. The precision of the technique was better than a relative standard deviation of 2.1% at 60  $\mu$ M levels and better than 0.5% at 0.1  $\mu$ M, with a throughput of 60 samples/hr. The detection limit of the method was found to be 1  $\mu$ M (1.5 ng BH<sub>4</sub><sup>-</sup>) with a linear range up to 1 mM. The dynamic range extends over five orders of magnitude in BH<sub>4</sub><sup>-</sup> concentration. The effects of working potential, concentration of As(III) and HCl in the reagent stream, type and flow rate of the acceptor solution, temperature and interferences on the FIA signals were studied.

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Corporation on STN  
ACCESSION NUMBER: 1992:475537 SCISEARCH  
THE GENUINE ARTICLE: JG901  
TITLE: BOROHYDRIDE OXIDATION AT A GOLD ELECTRODE  
AUTHOR: MIRKIN M V (Reprint); YANG H J; BARD A J  
CORPORATE SOURCE: UNIV TEXAS, DEPT CHEM & BIOCHEM, AUSTIN, TX 78712 (Reprint)  
COUNTRY OF AUTHOR: USA  
SOURCE: JOURNAL OF THE ELECTROCHEMICAL SOCIETY, (AUG 1992) Vol. 139, No. 8, pp. 2212-2217.  
PUBLISHER: ELECTROCHEMICAL SOC INC, 10 SOUTH MAIN STREET, PENNINGTON, NJ 08534.  
DOCUMENT TYPE: Article: Journal  
FILE SEGMENT: PHYS; ENGI  
LANGUAGE: English  
REFERENCE COUNT: 28  
ENTRY DATE: Entered STN: 1994  
Last Updated on STN: 1994

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS.  
AB The multistage process of borohydride oxidation in an 8 e<sup>-</sup> reaction to borate at a Au electrode has been studied by means of fast-scan cyclic voltammetry (CV) and scanning electrochemical microscopy (SECM). The total irreversibility of this process observed previously is shown to be a result of the presence of very unstable intermediates. CV measurements showed that at least two stages of the process are quasi-reversible, and the presence of a coupled homogeneous chemical reaction was proved by SECM. The rate constant for this reaction as well as the electrochemical kinetic parameters for the first stage of oxidation are evaluated using digital simulation. The adsorption of the electroactive species associated with the first two-electron stage of the oxidation becomes apparent at scan rates higher than 200 V/s. A very small fractional surface coverage (estimated to be less than 0.001) is shown to produce CV waves characteristic of adsorption- rather than diffusion-controlled processes. The second chemical stage of this process is much faster than the first. The oxidation of borohydride at a gold anode is shown to have a different mechanism than that proposed earlier for platinum electrode.

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Corporation on STN  
ACCESSION NUMBER: 1992:378168 SCISEARCH  
THE GENUINE ARTICLE: H2518  
TITLE: DYNAMIC ELECTROCHEMISTRY - METHODOLOGY AND APPLICATION  
AUTHOR: RYAN M D (Reprint); CHAMBERS J Q  
CORPORATE SOURCE: UNIV TENNESSEE, DEPT CHEM, KNOXVILLE, TN 37996; MARQUETTE UNIV, DEPT CHEM, MILWAUKEE, WI 53233  
COUNTRY OF AUTHOR: USA  
SOURCE: ANALYTICAL CHEMISTRY, (15 JUN 1992) Vol. 64, No. 12, pp. R79-R116  
ISSN: 0003-2700.  
PUBLISHER: AMER CHEMICAL SOC, 1155 16TH ST, NW, WASHINGTON, DC 20036.  
DOCUMENT TYPE: General Review; Journal  
FILE SEGMENT: PHYS; LIFE  
LANGUAGE: English  
REFERENCE COUNT: 1216  
ENTRY DATE: Entered STN: 1994  
Last Updated on STN: 1994

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Corporation on STN  
ACCESSION NUMBER: 1991:400993 SCISEARCH  
THE GENUINE ARTICLE: FV724  
TITLE: DIRECT DETERMINATION OF DIFFUSION-COEFFICIENTS BY CHRONOAMPEROMETRY AT MICRODISK ELECTRODES  
AUTHOR: DENAULT G (Reprint); MIRKIN M V; BARD A J  
CORPORATE SOURCE: UNIV TEXAS, DEPT CHEM, AUSTIN, TX 78712  
COUNTRY OF AUTHOR: USA  
SOURCE: JOURNAL OF ELECTROANALYTICAL CHEMISTRY, (25 JUN 1991) Vol. 308, No. 1-2, pp. 27-38.  
ISSN: 0022-0728.  
PUBLISHER: ELSEVIER SCIENCE SA LAUSANNE, PO BOX 564, 1001 LAUSANNE 1, SWITZERLAND.  
DOCUMENT TYPE: Article; Journal  
FILE SEGMENT: PHYS  
LANGUAGE: English  
REFERENCE COUNT: 21  
ENTRY DATE: Entered STN: 1994  
Last Updated on STN: 1994  
\*ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS.\*  
AB The chronoamperometric response at a microdisk is used for the direct determination of the diffusion coefficient of an electroactive species. The method does not require knowledge of the bulk concentration and the number of electrons participating in the electrode reaction, and requires only a value for the disk radius. Subsequent determination of the number of electrons (n) for an electrode reaction or the concentration of electroactive species is also possible. This approach is demonstrated with the evaluation of the diffusion coefficient of Fe(CN)<sub>6</sub>(4-) in KCl and that of borohydride ion in NaOH. In both cases, the values of n found remained constant over a wide time range and correspond to those expected for these processes.

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